How prepared do newly-qualified teachers feel? Differences between routes and settings

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**Abstract**

Does it matter whether teachers are trained in schools or universities? In England, there is an ongoing change in the routes to becoming a newly qualified teacher (NQT), and in the proportion of new teachers arriving via each. Given this, and widely-reported problems with teacher supply, it is important to consider whether there are discernible differences between the routes in terms of their outcomes. This paper is based on a re-analysis of the 2015 Department for Education survey of 7,770 NQTs. The outcomes considered are the levels of reported NQT satisfaction with their overall training and induction, preparedness to help improve pupil reading skills, whether the reported levels of satisfaction vary substantively between routes, phases, and types of provision, how much of any such difference is attributable to the prior characteristics of the students following these routes, and how much to the routes alone. Using logistic regression, it was possible to explain around 18% of the otherwise unexplained variation in NQT responses. Most of the variation between individual responses remains unexplained – perhaps because key but unknown variables are missing, and certainly because the level of satisfaction is generally so high. The average levels of satisfaction for NQTs are largely un-stratified by sex, disability, age and ethnicity. Within the two main routes of school- and university-led there is almost as much variability as there is between them. Once other factors are taken into account, the differences in reported satisfaction between routes and providers are small. There is, therefore, no particular reason to promote or support one route at the expense of the other – at least in terms of NQT satisfaction.

## Introduction

In England, there are a number of routes into teaching, their variety is increasing over time, and the proportion of newly-qualified teachers (NQTs) delivered via each route is also varying. There are routes to qualified teacher status (QTS) based on obtaining a qualification first, and then getting a job. These are typically the undergraduate BEd and BA/BSc, and the postgraduate PGCE courses (Gorard et al. 2006). They are being replaced to some extent by routes involving employment in school first and leading to a qualification later - such as Teach First and employment-based initial teacher training (EBITTs). The former are composed of substantial input from a higher education institution (university or HEI) along with extended periods of school-based experience. Bachelor degrees with QTS typically last for three years, with shorter versions available for entrants with relevant prior qualifications or experience. PGCEs are generally one year full-time courses, often based on a curriculum subject specialism at secondary school, yielding QTS and the academic qualification - often at Masters' level. The employment based routes into teaching are newer and evolving, but have included Graduate Teacher Programmes, and Registered Teacher Programmes. Candidates, usually with relevant undergraduate degrees or part thereof, are employed in a teaching post by a school while they learn and achieve QTS. School-Centred Initial Teacher Training programmes (SCITTs) are usually run by a consortium of schools (or more rarely by

one school). Again, candidates usually have a relevant undergraduate degree, and the course usually lasts for one year. It involves co-operation with HEIs and can also lead to a PGCE. There are also routes such as Teach First, based on an internship model, that can be organised by HEIs or others.

One of the key issues that arises from such a wide range of providers and routes into teaching is whether there are key differences in the type and quality of preparation that NQTs receive. This paper addresses that issue, first via a brief summary of existing evidence, and then through considering the Department for Education (DfE) survey of NQTs in England for 2015. The methods for the latter are presented, followed by the major results, a discussion of the limitations of the dataset involved, and the paper ends with the implications for the future of initial teacher development.

## Background

Whatever the differences are between NQTs from different routes it is unsurprising that they tend to disappear as teachers become more experienced – perhaps as early as their third year in post (Centre for Education and Inclusion Research 2011). But in the short term, if the routes into teaching prepare NQTs differently, this might have an impact on those first few years (and so the lives of the pupils NQTs will deal with in those years), and therefore on teacher retention and success.

All NQTs tend to arrive in their first post focussed on classroom issues (Day and Gu 2010), although some still wish they had been better prepared for some elements of classroom practice (Hobson et al. 2006). They tend to report being well prepared for dealing with their subject specialism (secondary school teachers) or literacy and numeracy (primary school teachers), but less well prepared for planning, administrative aspects of the job, assessment practices, and handling parents, for example (Griffiths et al. 2002). Other areas where NQTs reported feeling less prepared are related to issues of equal opportunities in the classroom, support for pupils with behavioural and emotional difficulties, and handling bullying/harassment (Owen et al. 2009). This may be exacerbated in some cases by poor induction practices, including overly full timetables and lack of other support even when NQTs take on new responsibilities (Bubb and Earley 2006, Springate et al. 2009). Nevertheless, most new teachers say that they would follow the same route to QTS again, and mostly with the same provider (Hobson et al. 2006).

Over and above this general picture about the preparation of all teachers, prior research has suggested that there may be differences in NQT preparedness between routes (Evans et al. 2009). The different routes and changes over time could affect morale, early teacher effectiveness, teacher supply, and national and regional balances. This is the important issue addressed in this paper.

In the small study by Hobson et al. (2006), satisfaction with their route and provider was slightly higher among SCITT-based NQTs than those from other routes. And whichever route was followed, NQTs reported that their school-based preparation was more valuable than their otherwise enjoyable experiences in HEIs. It certainly seems that mature students find induction into teaching easier via an employment-based route than those from more traditional routes (Griffiths 2011).

On the other hand, UCET (2008) pointed out that traditional routes based in HEIs in partnership with schools are more likely than SCITT or EBITT routes to be rated as high quality by OFSTED (the official organisation handling school inspections in England). Some studies suggest that, while students necessarily following only one route may not realise it, those pursuing a School Direct route will have fewer resources, and that their preparation will be worse – even in terms of classroom management (Hodgson 2013). The undergraduate route which includes the longest time studying in a HEI, allows more time to be spent on important areas such as SEN (UCET 2008), and creates a natural progression from reliance on academic tutors to practitioner ones (Laker et al. 2008). Perhaps for the same kind of reasons, BEd NQTs following a three or four year course reported feeling better prepared and facing less stress than their peers following the one year PGCE route (Cains and Brown 1996), or even where the PGCE had been for two years (Owen at al. 2009). Similarly, primary school NQTs reported being better prepared than secondary (Cains and Brown 1998). But after 20 weeks, primary NQTs reported more stress, suggesting that how well prepared someone reports being on arrival in their first post may not be an entirely reliable indicator of their fitness for the job.

Some of these studies and other like them are quite old, and so do not take into account the recent increase in the number of routes and the balance of students between them in England. Most studies also collected data from students on only one route, with no explicit comparator. What this new paper does is use the most up-to-date reports from NQTs on all routes in England to address whether they are differently prepared for their first post, once their prior qualifications and known characteristics have been taken into account.

**Methods**

The analysis presented in the next section is based on teacher-level data gathered through the DfE Newly Qualified Teachers: Annual Survey 2015, and administrative data collected by the National College for School Leadership (NCLS) about the former trainees and their training. The individuals invited to answer the survey were all NQTs who had completed their initial teacher training (ITT) in 2013/14 in England, and gained qualified teacher status (QTS) between 1st December 2013 and 30th November 2014. The survey questions used as 'outcome' variables in the following detailed analyses are - satisfaction with overall quality of training, and preparation to teach reading, including, phonics and comprehension. Satisfaction with outcomes such as preparedness to deal with special needs, classroom behaviour, and assess educational research was found to be high, and present no patterned differences. These are not dealt with in detail. This paper also does not address the data from the survey on NQT experiences and concern for pupil well-being. The question about overall satisfaction was answered by 7,770 of the 32,779 who started ITT in that cohort. The overall response rate is therefore only 24%.

Linked to the responses at an individual level are respondents' background characteristics such as age, sex, disability status, and ethnicity, prior qualifications, the start and end dates of their course, and the details of the course including whether undergraduate (UG) or postgraduate (PG), phase (such as secondary or primary), route (such as SCITT, HEI or Teach First), qualification sought,, subject specialism. , the provider, the providers' number of NQTs per year, OFSTED grade (from the OFSTED/NCTL published Inspection Judgements), overall NQT survey satisfaction results for prior years, and geographical location of the provider. The Provider Profile Management Information systems produced the

identification of each provider – including name, ID, postcode, region and the number of NQTs by phase and route in 2015. The NQT survey also provided a response rate in 2015, the number and percentage of NQTs that completed the survey in 2013 and 2014, and the percentage of NQTs who responded with each possible response about overall satisfaction in 2013 and 2014, for each provider and phase. All of these are used as possible predictors or independent variables in the models that follow.

*Data preparation*

The provider variables were aggregated into the following typology of nine over-arching categories:

- Higher Educational Institution, Provider led training, Undergraduate course (such as BEd)
- Higher Educational Institution, Provider led training, Postgraduate course (such as PGCE)
- Higher Educational Institution, School Direct Fee or self-funded, Postgraduate
- Higher Educational Institution, School Direct Salaried, Postgraduate
- School Centred Initial Teacher Training provider, Provider led training, Postgraduate
- School Centred Initial Teacher Training provider, School Direct Fee or self-funded, Postgraduate
- School Centred Initial Teacher Training provider, School Direct Salaried/self-funded, Postgraduate
- Teach First
- Employment Based Initial Teacher Training provider, Provider led training, Postgraduate (legacy / deferred trainees).

The HEIs were collapsed into five groups based loosely on their self-declared groupings, some of which no longer exist – Russell Group, 1994, Million+, University Alliance, and Guild HE. Those universities not in such a group were allocated to one judged on age and similarity of mission.

Four variables were selected to represent the type of course taken by each NQT - course type, qualification aim, route, and provider category. For each of these the average age of students, and the percentage of males, and students with known disability and minority ethnicity were computed. These were then used to create 16 new variables such as average age in course type, and percentage of males in each provider category. They were used as potential explanatory variables both on their own (to help assess whether the nature of the intake matters), and in interaction with the relevant characteristic of each individual (to help assess whether the proportion of males matters more for males, for example).

Any multivariate analysis that drops cases with any missing data will quickly end up with too few cases to process. Therefore, a decision has to be made whether the cases with missing values can be included in some way that does justice to the data. In general, missing data and information refused were recoded as not known. Missing data for the binary variables such as the disability flag were recoded as not known to be in the disadvantaged category.

*Analyses*

The outcomes considered in this paper are overall satisfaction, and preparedness for teaching reading. The frequency of each category of each outcome variable was cross-tabulated with the route and background characteristics of all respondents.

The outcome variables were also used as dependent variables for logistic regression. The more usual multiple linear regression has two main drawbacks. It does not work with categorical dependent variables, such as the level of satisfaction with training, nor where the dependent and predictor variables are not linearly related (Achen 1982). And, where they can be compared, logistic regression regularly explains more of the variation in the dependent variable than linear regression does (King 2002). Logistic regression uses predictor variables (of any kind) to compute a score on an underlying latent variable (the predicted value of the dependent variable). If this score is above a specified critical value then the dependent variable is set to one category, else it is set to another. In other words, the procedure is used to 'predict' which of two or more categories each individual case will manifest, and in doing so creates a model based on the predictor variables (Gilbert 1993, Lehtonen and Pahkinen 1995).

In creating a model to 'predict' or explain the variation in an outcome such as overall satisfaction, the possible predictors were entered in batches, with forward stepwise selection of only those variables making any noticeable difference to the model in each batch. The first batch was the student background characteristics, the second their teaching subjects and prior qualifications, the third consisted of five route variables, and the fourth included the aggregated context variables and the total number of NQTs of each type in the same route as the student. The final step for the overall model included any interaction terms. For the models involving only primary or only secondary phase NQTs, the models also included the relevant prior satisfaction levels, response rates and OFSTED grading. These variables could not be used for the overall model because they are sector specific and so contain numerous missing values for the other sector.

Each new batch of explanatory variables added to the model might increase the percentage explained correctly, over and above that of the baseline and all of the previous batches combined. This will provide an estimate of the differences in reported satisfaction between routes, having taken into account the differences between the people following each route. For comparison a further version of the overall model was created with all variables entered in one block, and selected for inclusion in terms of 'effect' size.

This modelling is, and cannot be, a definitive test of anything. It does not assess a causal link (Gorard 2013). However, the kind of multivariate associations that the model can reveal will suggest where the possible causes of revealed differences lie. The contribution of each batch and each variable can be neatly summarised as a figure – how much of the variation in outcome is attributable to each variable or bundle of variables. This is the percentage of explained variation over and above the base figure, also known as the 'adjusted count pseudo-$R^2$' (see http://www.ats.ucla.edu/stat/mult_pkg/faq/general/Psuedo_RSquareds.htm). In order to provide the most parsimonious explanatory model, variables that make no discernible difference to the pseudo-$R^2$, or whose coefficients are indistinguishable from an odds ratio of 1, are ignored. Where some cell sizes are very small this can sometimes create unfeasibly large or small coefficients for categorical variables. But this has very little impact on the overall model, because of the few cases involved. The percentage of cases whose responses is predicted 'correctly' by the model at each step is the best guide to the substantive importance of each predictor.

The cases are an incomplete census, with only a 24% response rate, and no random selection (and therefore no probabilistic uncertainty). Issues such as standard errors and statistical significance are not relevant (and could be very misleading). Throughout, the analysis is based on 'effect' sizes including the percentage of cases whose response is predicted 'correctly' by the model, and the odd ratios or coefficients for each independent variable. A few predictor variables are real numbers (such as the respondents' age). The coefficients for these are multipliers. So, for example, a coefficient of 1.1 for age in years would mean that an individual would be 10% more likely to have a specified outcome for every year of age. Most predictor variables are categorical (such as whether a course was postgraduate or undergraduate). These have a coefficient for each category, with the final category having an arbitrary coefficient of one, and the value is an odds ratio for each category relative to the last. So, a coefficient of 1.1 for the phase of the course could mean that an individual following a postgraduate course would be 10% more likely to have a specified outcome than one following an undergraduate course.

**Summary of results**

Using these methods, what can be learnt about satisfaction with each of the routes into QTS? The results are presented for four models in turn – overall satisfaction with preparedness for all teachers, for primary phase only, for secondary phase only, and for preparedness to teach reading for all teachers.

*Comparing 'very good' overall with all other responses, both phases*

For each of the four possible responses – poor, satisfactory, good, and very good – to overall satisfaction with the course and preparation for teaching the frequencies were similar for all age groups, both sexes, disability status, and ethnic groups. There were variations in the pattern of response by region of provider (from 38% very good in the East of England to 51% in the South East, for example). But this could be due to differences in the providers not the region itself, and will become clearer in the multivariate analysis that follows. Similar comments can be made about differences in the age range NQTs are prepared to teach (64% very good for 14-19, and 38% for 3-7 year old range, for example), and the type of teaching qualification gained. The biggest difference was within the HE routes, dependent upon the type of HEI (Tables 1 and 2). NQTs from SCITTS are most satisfied, closely followed by those on routes linked to a purportedly prestigious Russel Group university. The least satisfied by a considerable margin are those in HEIs outside the HESA university sector (usually newer, small and less prestigious).

Table 1 – Percentage of respondents in each type of institution giving each response about overall satisfaction, both phases

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| EBITT | 0 | 20 | 40 | 40 |
| HEI | 2 | 10 | 44 | 45 |
| Non-HESA HEI | 8 | 25 | 50 | 17 |
| SCITT | 1 | 9 | 34 | 57 |
| Teach First | 2 | 12 | 43 | 44 |

Table 2 – Percentage of respondents in each provider category giving each response about overall satisfaction, both phases

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| Russell group or similar | 1 | 7 | 36 | 56 |
| 1994 group or similar | 1 | 10 | 42 | 48 |
| Million+ group or similar | 2 | 13 | 48 | 38 |
| Alliance group or similar | 2 | 11 | 46 | 42 |
| Guild HE group or similar | 2 | 9 | 47 | 43 |
| Other providers (non-HEIs) | 1 | 9 | 34 | 57 |

The first of the full logistic regression models used the collapsed version of the question relating to overall satisfaction, for all 7,770 cases. Responses of 'poor', 'satisfactory' and 'good' (52.6% of cases) were contrasted with 'very good' (47.4%). Predictor variables were added in five steps or blocks (see above). A 'prediction' for any individual would have a 52.6% chance of being correct if it just assumed that all individuals were in the first category (less than 'very good'). This is the base figure in Table 3. Adding background characteristics adds little to this base figure, and the context in terms of who else is studying on that route, and the interaction terms similarly make little difference. But there is a noticeable increase in prediction accuracy when the variables concerning the provider, subject, and qualifications are added. Together the latter variables explain 11% of the variation that was previously unexplained. This is not the kind of increase that comes solely from *post hoc* fitting of variables. The differences are still small, once other things have been taken into account, but there are some patterned differences in overall satisfaction levels.

Table 3 – Percentage of variation explained in each step of a binary regression model comparing 'very good' responses to overall satisfaction with all others, both phases

| Step | Percentage explained | Percentage improvement on base |
|---|---|---|
| Base – no variables | 53 | |
| Block 1 - background | 54 | 2 |
| Block 2 – subject/qualification | 59 | 13 |
| Block 3 - route | 60 | 16 |
| Block 4 - context | 60 | 16 |
| Block 5 – interaction terms | 61 | 17 |

N=7770

Note: the final column in all such tables, also known as the adjusted count pseudo-$R^2$ is calculated as the difference between the Block percentage and the base percentage divided by 100-the base percentage. For example, (53.7-52.6)/(100-52.6) is approximately 0.023 or 2.3% of the previously unexplained variation.

Table 4 provides a summary of the variables retained in the most parsimonious model (using forward stepwise selection of variables). These show that older NQTs tend to be somewhat less satisfied than average. Since this result comes before the route is considered it is not clear whether older NQTs are on different routes which lead to lower satisfaction or whether this is a direct function of age (perhaps they become more critical). The results will be sensitive to the order in which the variables are entered (as discussed further below). Males are slightly more likely to rate their preparation as 'very good'. Table 4 also shows that NQTs with a flag for any disability are slightly less satisfied than others. The final row shows that

ethnic minority NQTs are slightly more satisfied if there are other ethnic minority students on the same kind of course as them.

Table 4 - Standardised coefficients in binary regression model comparing 'very good' responses to overall satisfaction with all others, both phases

| Variable | Coefficient |
|---|---|
| ***Age*** | ***0.994*** |
| **Sex (male)** | **1.10** |
| **No disability flag** | **1.20** |
| **Institution type** | |
| EBITT | 0.84 |
| HEI | 1.23 |
| Non-HESA HEI | 0.44 |
| SCITT | 1.58 |
| Teach First | 1.00 |
| **Provider region** | |
| East Midlands | 1.47 |
| East of England | 0.96 |
| Eastern | 1.38 |
| London | 1.42 |
| Non-regional providers | 1.08 |
| North East | 1.51 |
| North West | 1.29 |
| South East | 1.60 |
| South West | 1.35 |
| West Midlands | 1.55 |
| Yorkshire and the Humber | 1.00 |
| **Phase code** | |
| Age 3-7 | 0.56 |
| Age 3-9 | 0.68 |
| Age 3-11 | 0.64 |
| Age 5-9 | 0.74 |
| Age 5-11 | 0.67 |
| Age 7-11 | 0.75 |
| Age 7/9-14 | 0.90 |
| Age 11-16 | 0.86 |
| Age 11-19 | 0.99 |
| Age 14-19 | 1.00 |
| **Qualification taken** | |
| QTS assessment only/no qualification | 1.18 |
| First degree honours | 0 |
| Professional GCE | 1.22 |
| QTS registration | 1.59 |
| PGCE/Professional GDE | 0.97 |
| Other level M | 1.00 |
| **Provider category** | |
| Russell group or similar | 0.78 |
| 1994 group or similar | 0.58 |

| | |
|---|---|
| Million+ group or similar | 0.42 |
| Alliance group or similar | 0.49 |
| Guild HE group or similar | 0.50 |
| Other providers (non-HEIs) | 1.00 |
| **Routes** | |
| HEI core UG | 0 |
| HEI core PG | 1.05 |
| HEI School Direct fee | 0.87 |
| HEI School Direct salary | 1.00 |
| SCITT provider led | 0.95 |
| SCITT School Direct fee | 0.68 |
| SCITT School Direct salary | 1.00 |
| Teach First | 1.00 |
| EBITT provider led | 1.00 |
| ***Ethnic minority by percentage in course type*** | ***1.01*** |

Once these background factors are taken into account, the institution type, region, phase code and qualification make a substantial difference together. The numbers in some institution types are small and this may distort the coefficients by making them appear unreasonably inflated or deflated. Also, with some very small numbers (such as for EBITT) it may be less likely that the respondents represent the entire cohort. Nevertheless, the overall satisfaction from those pursuing SCITTs is higher, and those in non-HESA HEIs lower, all other things being equal. Those based in the North East, West Midlands and South East are among the most satisfied.

There is an interesting trend in the results for the phase code. In general, NQTs express more satisfaction the older the pupils they have prepared to teach. The differences here are considerable. NQTs in non-HEI routes and those in the more traditionally prestigious universities are more satisfied. As with the phase of pupils, this difference is considerable. NQTs also tend to be slightly more satisfied the higher the level of qualification they are taking or have taken, and similarly postgraduates are slightly more satisfied than undergraduates. However, neither of these patterns is strong or simple.

In order to assess the robustness of the model in face of changing the order of entering the variables, the model was also run with all variables entered simultaneously, using either forward or backward stepwise entry. The amount of variation explained remained constant, of course. But some variables started acting as proxies for one another. The difference was that none of the respondent background variables were retained in the final model. Instead, they was replaced by the subject specialism (itself stratified by student background), and by the interaction context variables. Specifically, in addition to ethnic minority students being more satisfied in provider categories with more ethnic minorities, disabled students were more satisfied in provider categories with more disabled students, and males were more satisfied on course types with more males. So, in reality, perhaps context matters slightly more and individual background slightly less than is portrayed in Table 4. This does not alter the substantive findings, since the role of background is small in all of the models.

*Comparing 'very good' with all other responses, primary phase*

The picture is quite similar when considering only the 4,234 cases prepared to teach in the primary school sector. In this sector, NQTs from the Teach First route are clearly more satisfied (than overall) while those from HEIs other than the Russell Group are less so (Tables 5 and 6). Note that the Russell Group is a loose organisation of 24 long-established research-intensive universities in the UK.

Table 5 – Percentage of respondents in each institution type giving each response about overall satisfaction, primary only

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| EBITT | 0 | 23 | 46 | 31 |
| HEI | 2 | 10 | 49 | 39 |
| Non-HESA HEI | 8 | 25 | 50 | 17 |
| SCITT | 1 | 8 | 33 | 59 |
| Teach First | 0 | 6 | 46 | 50 |

Table 6 – Percentage of respondents in each provider category giving each response about overall satisfaction, primary only

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| Russell group or similar | 1.1 | 7.2 | 41.0 | 50.7 |
| 1994 group or similar | 0.8 | 9.6 | 47.1 | 42.5 |
| Million+ group or similar | 1.4 | 13.1 | 51.5 | 34.0 |
| Alliance group or similar | 1.7 | 11.3 | 49.5 | 37.6 |
| Guild HE group or similar | 2.0 | 9.1 | 50.5 | 38.4 |
| Other providers (non-HEIs) | 0.8 | 7.8 | 32.3 | 59.1 |

N=4,234

The previous regression model now changes a little, partly because it is now possible to add the variables relating to OFSTED grading, previous survey response rates, and levels of satisfaction for each route from prior years of the survey (involving different NQTs). This leads to slightly more variation being explained. However, even the small amount of stratification by respondent background in the overall model disappears. Even before anything else is taken into consideration, primary sector NQTs do not differ much by background in their satisfaction (Table 7). Instead, the fourth step of 'context' becomes more important.

Table 7 – Percentage of variation explained in each step of a binary regression model comparing 'very good' responses to overall satisfaction with all others, primary only

| Step | Percentage explained | Percentage improvement on base |
|---|---|---|
| Base – no variables | 57.4 | - |
| Block 1 - background | 57.4 | 0 |
| Block 2 – subject/qualification | 60.7 | 7.7 |
| Block 3 - route | 62.0 | 10.8 |
| Block 4 - context | 64.7 | 17.1 |
| Block 5 – interaction terms | 65.0 | 17.8 |

N=4234

Once the route variables are included, all other things being equal, those on SCITTs are more satisfied than those on EBITTs or in non-HESA HEIs, while those in non-regional providers

are more satisfied than those in any region. Those specialising in PE for the primary sector are less satisfied than any other subject area. As with the overall model, NQTs report being more satisfied the higher their qualification tends to be.

*Comparing 'very good' with all other responses, secondary phase*

Using only the 3,536 cases qualified to teach in the secondary sector produces a similar picture to the overall model, although the general level of satisfaction is higher than for primary, and relatively evenly distributed between routes (Table 8).

Table 8 – Percentage of respondents in each institution type giving each response about overall satisfaction, secondary only

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| EBITT | 0 | 18.5 | 37.0 | 44.4 |
| HEI | 1.4 | 8.5 | 36.7 | 53.4 |
| SCITT | 1.3 | 8.8 | 35.5 | 54.4 |
| Teach First | 2.5 | 13.1 | 42.6 | 41.8 |

As with the primary sector, it is possible to explain slightly more variation in the responses of secondary NQTs than in the overall model by introducing new variables about OFSTED inspections and survey responses from prior cohorts on the same routes. Here, however, there is some stratification by respondent background (Table 9). Again most variation is explained by the subject and qualification step.

Table 9 – Percentage of variation explained in each step of a binary regression model comparing 'very good' responses to overall satisfaction with all others, secondary only

| Step | Percentage explained | Percentage improvement on base |
|---|---|---|
| Base – no variables | 53.1 | |
| Block 1 - background | 55.0 | 4.1 |
| Block 2 – subject/qualification | 58.8 | 12.2 |
| Block 3 - route | 60.0 | 14.7 |
| Block 4 - context | 61.3 | 17.5 |
| Block 5 – interaction terms | 61.5 | 17.9 |

As with the overall model, younger NQTs and males tend to be slightly more satisfied, those in SCITTs are more satisfied than those in EBITTs, and in distinction to the primary sector model, those pursuing a PE specialism were more satisfied. The biggest variation occurs with the qualification taken. Those taking first degrees with honours are considerably more satisfied. The satisfaction rates are consistent with those of previous year cohorts, and with OFSTED grading. Both of these findings suggest that courses have some intrinsic properties that NQTs appreciate, and that are stable over a number of years.

*Comparing very or good versus less than good preparation for reading, both phases*

The final model, for comparison, concerns how prepared NQTs feel to handle struggling readers. As with overall satisfaction, NQTs reported preparedness for reading is largely un-stratified by age and sex of respondent, and their disability status. However, the level of satisfaction is lower than overall (Table 10). In general, new teachers are more satisfied with their preparation the older their charges are (Table 11).

Table 10 – Percentage of respondents in each institution type giving each response about reading, both phases

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| EBITT | 8 | 25 | 33 | 23 |
| HEI | 10 | 22 | 29 | 21 |
| Non-HESA HEI | 0 | 25 | 42 | 17 |
| SCITT | 9 | 20 | 29 | 27 |
| Teach First | 22 | 31 | 25 | 9 |

Table 11 – Percentage of respondents in each phase code giving each response about reading, both phases

| | Poor | Satisfactory | Good | Very good |
|---|---|---|---|---|
| Age 3-7 | 1.5 | 11.4 | 32.6 | 36.8 |
| Age 3-9 | 0 | 13.8 | 32.8 | 37.9 |
| Age 3-11 | 3.4 | 17.1 | 36.4 | 25.8 |
| Age 5-9 | 4.2 | 12.5 | 33.3 | 33.3 |
| Age 5-11 | 3.5 | 15.7 | 32.5 | 29.9 |
| Age 7-11 | 3.7 | 21.1 | 33.7 | 23.2 |
| Age 7/9-14 | 11.1 | 19.4 | 27.8 | 22.2 |
| Age 11-16 | 17.3 | 30.0 | 23.9 | 11.6 |
| Age 11-19 | 18.4 | 29.0 | 24.2 | 12.0 |
| Age 14-19 | 11.9 | 35.7 | 38.1 | 4.8 |

The model based on the single survey item about satisfaction with preparedness for teaching reading is summarised in Tables 12 and 13. It explains more variation than the first three models about overall satisfaction, and almost all of this increase comes when the variables concerning subject and qualification taken are added (Table 12).

Table 12 – Percentage of variation explained in each step of a binary regression model comparing 'very good' responses to preparation for reading with all others, both phases

| Step | Percentage explained | Percentage improvement on base |
|---|---|---|
| Base – no variables | 50.8 | - |
| Block 1 - background | 53.1 | 4.9 |
| Block 2 – subject/qualification | 63.7 | 27.5 |
| Block 3 - route | 63.8 | 27.7 |
| Block 4 - context | 63.9 | 27.9 |
| Block 5 – interaction terms | 64.2 | 28.6 |

Males and those with any kind of reported disability are slightly less satisfied in their preparation for reading (Table 13). The former could be simply because more males follow the secondary route, and so teaching reading is less generally relevant to them. The same could apply to the lower reported readiness via Teach First compared to SCITTs and EBITTs, and the much higher preparedness of those with no subject specialism (all of whom will be on the primary route), or not linked to a HEI. This is borne out by the relative satisfaction in each phase code. Non-regional providers and those in the West Midlands have the highest satisfaction with preparation for reading.

Table 13 - Standardised coefficients in binary regression model comparing 'very good' responses with all others, for reading, both phases

| Variable | Coefficient |
|---|---|
| **Sex (female)** | **1.06** |
| **No disability flagged** | **1.25** |
| **Institution type** | |
| EBITT | 1.64 |
| HEI | 1.31 |
| Non-HESA HEI | 1.33 |
| SCITT | 1.05 |
| Teach First | 1.00 |
| **Provider region** | |
| East Midlands | 1.08 |
| East of England | 1.21 |
| Eastern | 1.37 |
| London | 1.10 |
| Non-regional providers | 1.54 |
| North East | 1.23 |
| North West | 1.24 |
| South East | 1.37 |
| South West | 1.36 |
| West Midlands | 1.54 |
| Yorkshire and the Humber | 1.00 |
| **Subject specialism** | |
| STEM | 0.84 |
| Languages | 1.65 |
| English | 1.62 |
| Social sciences and humanities | 1.02 |
| Arts | 1.11 |
| No specialism | 1.29 |
| PE | 1.00 |
| **Phase code** | |
| 3-7 | 3.47 |
| 3-9 | 3.27 |
| 3-11 | 2.32 |
| 5-9 | 2.51 |
| 5-11 | 2.38 |
| 7-11 | 2.12 |
| 7/9-14 | 1.58 |
| 11-16 | 0.90 |
| 11-19 | 0.96 |
| 14-19 | 1.00 |
| **Qualification taken** | |
| QTS assessment only/no qualification | 0.40 |
| First degree honours | 0.75 |
| Professional GCE | 0.49 |
| QTS registration | 0.47 |
| PGCE/Professional GDE | 0.56 |

| | |
|---|---|
| Other level M | 1.00 |
| **Provider category** | |
| Russell group or similar | 0.58 |
| 1994 group or similar | 0.56 |
| Million+ group or similar | 0.47 |
| Alliance group or similar | 0.50 |
| Guild HE group or similar | 0.43 |
| Other providers (non-HEIs) | 1.00 |

These results are likely to be more about the phase in which the NQT is preparing to teach than their characteristics or the route they follow. This was confirmed by running the model separately for primary phase NQTs alone. The model did not explain a useful amount of variation in results, with all variables included the correctness of the model went from a baseline of 64.1% to only 64.6%.

## Conclusion

This section describes some of the limitations of the dataset used for this study, presents some recommendations for future research of this type, before summarising the key findings and their implications for policy on preparing new teachers.

*Limitations of the analysis/data*

This analysis is based on a rich dataset combining attitude, background, context and historical elements. However, it has a number of important deficiencies for the purposes it was used for here. Most notably, it only includes NQTs, and it has a response rate of only 24%.

The lack of data on those who fail or otherwise drop out from their courses (and perhaps even those who qualify but do not end up in a teaching role) means that the results could be quite misleading. For example, if two routes had equivalent satisfaction scores for their eventual NQTs, but one route had complete data and the other had lost 50% of its students at an earlier stage, then it would be unfair to rate their satisfaction as being equal (Gorard 2013). Yet this is what would have to happen in the analysis presented here. In future, it would be useful for the DfE to gather as much information as possible about the minority of students that might drop out from each route (at the very least the number of such cases). It might also be interesting to have some knowledge of the nature of the school in they took their first post, and indeed whether they did take up a teaching post.

The response rate clearly affects what is often termed the external validity of the study. We cannot be sure how generalizable the results will be to the entire cohort. But more importantly, it is likely to introduce bias and so influence the security of the findings themselves (Gorard 2015). Wherever it has been possible to assess, it has been demonstrated that those individuals not responding to surveys are not a random sub-set of those eligible (Behaghel et al. 2009). In future, more effort should be put into getting as near to full response as possible. This might involve consideration of the timing of the survey, and the incentives for completing it. But a simple suggestion would be to reduce the length of the instrument. However interested the developers are in each and every item it is almost certain that many respondents will find it repetitive and eventually tedious.

Regression models of the kind presented above have three main intrinsic limitations, mostly arising from misconceptions about their meaning. The coefficients and the inclusion and exclusion of entire variables are sensitive to quite minor adjustments in the process of modelling. They are sensitive to the coding used, the existence of relatively sparse cells, the order and method used to enter them into the models, and to the existence of other correlated variables. This means that they should be interpreted as one, hopefully useful, way of envisaging the multivariate associations between the outcome and the predictor variables. It is best to ignore the precise value of each coefficient and consider only their relative importance to the model. However, some commentators treat them as proven causal agents whereas they are clearly only a way of representing correlations. A lack of association can indeed be read as evidence of a clear lack of causation. But an association is only the start of identifying a causal model.

The satisfaction data is self-reported and based on individuals' perceptions. However, these individuals have not experienced other routes or providers, and so no direct comparison is possible at the individual level.

Despite these limitations, the percentage of variation explained and the kind of variables included and their relative importance to the models has been shown to be robust across different versions. The results are worth taking seriously.

*Summary of findings and their implications*

The overall findings are summarised under the broad headings of the three issues raised in the introduction.

- To what extent any such differences are predictable on the basis of the prior characteristics of the students following these routes;

The clearest findings are that, in general, there is a high level of reported overall satisfaction with ITE, and that this is true across all routes. Very few respondents claimed that their preparation had been poor or even only satisfactory. There was less satisfaction with specific features such as preparation for handling special needs, behaviour and reading. But this may be due to differential relevance. For example, teaching reading via phonics is more common in primary settings than in secondary schools. So, secondary NQTs may report not feeling well prepared to teach via phonics but this may not influence their overall satisfaction level. The average levels of satisfaction for NQTs of different background characteristics are also high, and largely unstratified by sex, disability, age and ethnicity.

In all models, where the aggregated context variables are retained it tends to be the interaction version. Here, for example, neither an individual's disabled status nor the proportion of disabled NQTs on their route is retained in the model. But the interaction is. So, put simply, disabled NQTs tend to be more satisfied the more disabled students there are in the same provider category as them.

- How much of the difference in reported effectiveness between routes is attributable to the routes alone.

There is no evidence that the route taken matters for perceived preparation for using research, usefulness of induction, or readiness to handle behaviour or pupils with special needs in the classroom.

There is no apparent link between NQT satisfaction with their course and the availability of bursaries in specific, deemed shortage, subjects such as STEM.

In fact, the majority of unexplained variation in reported satisfaction outcomes remains unexplained in all models. Adding all available variables, including those aggregated and examined as interactions with others, can explain only around 20% of the unexplained variation even in the strongest models. Again this means that satisfaction with ITE and induction is, to a large extent, not patterned in terms of the measures and variables available for this analysis. It is important to recall both the limitations (above) and the overall low level of patterning when moving on to consider the patterns that are robust.

- The scale of the differences in the reported effectiveness of initial teacher training between routes, phases, and types of provision

Where the context (who one shares a route with) matters it is largely in relation to the characteristics of individuals themselves. The minority groups (males, older, flagged as any disability and flagged as any ethnic minority) are slightly more satisfied when there are more of the same in that route.

NQTs dealing with older age groups of pupils tend to be more satisfied, whatever route they follow. Otherwise, the non–HEI routes and those led by what are traditionally seen as the more prestigious universities produce more satisfied NQTs. The reported level of preparation for teaching reading is largely a function of the age group taught, and therefore its relevance to that age group.

The EBITTs route is being phased out and so no further consideration is given to the findings for this route. Leaving that aside, what does all of this mean?

The results in terms of the context variables make only a slight difference to the models, and the data cannot identify exactly who studies with whom. However, it is worth noting that the diversity of students on each route is apparently appreciated, particularly by those NQTs with minority characteristics (such as those reporting ethnic minority origins). This could be improved, perhaps as a kind of widening participation approach by those providers currently taking less than their fair share of students with minority characteristics (such as a reported disability). It is important that potentially disadvantaged trainee teachers are not unwittingly clustered in a sub-set of providers and routes.

In the two main routes of school-led and HEI-led there is almost as much variability within each route as there is between them. The percentage of NQTs reporting that their preparation had been 'very good' was high (56%) in the Russell Group universities and in the school-led providers. Once other factors are taken into account - such as the background characteristics of the NQTs, their level of study, and the phase they are trained for – the differences in reported satisfaction between routes and providers become even smaller. There is, therefore, no particular reason to promote or support either route at the expense of the other – at least in terms of NQT satisfaction. Both could be maintained, or either could be preferred, for a separate reason not covered by the dataset used here.

In both primary and secondary routes, those on SCITTs are more satisfied with their preparation overall, all other things being equal. For secondary routes NQTs are more satisfied if their route/provider had a higher OFSTED grade, and if previous NQTs had expressed higher satisfaction. This suggests a durable quality of the courses involved. Therefore, all other things being equal, successful SCITTs courses and routes via the most traditional university routes should be favoured.

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